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A phenomenological study of out-of-field general physics teachers in Caraga, Philippines: exploring challenges and experiences in teaching practice

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ABSTRACT

In the Philippines, the increasing interest in science, technology, engineering, and mathematics (STEM) highlights the need for qualified teachers with relevant expertise. However, a shortage of physics teachers often forces educators to teach general physics outside their specialization, compromising instructional quality and contributing to the country's low performance in the Program for International Student Assessment (PISA). While previous studies examined out-of-field teaching in STEM, its impact on teaching general physics remains underexplored. This study explored the experiences, coping mechanisms, and insights of 10 out-of-field general physics teachers in the Caraga Region using a phenomenological approach. Thematic analysis revealed nine key themes: reliance on ready-made modules, intensive lesson preparation, the utility of weekly lesson plans, employing strategies to motivate students, and challenges in achieving learning goals, institutional and peer support, teaching outside their specialization offered opportunities to acquire new knowledge and skills, flexibility, passion, and dedication to the profession also enabled teachers to cope effectively, and participants recommended assigning general physics to qualified educators and providing content-focused training for out-of-field teachers. The findings underscore the need for targeted policies and support systems to address out-of-field teaching and its implications for STEM education, ensuring high-quality instruction and better student outcomes.

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1. INTRODUCTION

In the Philippines, there is a growing interest in science and technology (S&T) [1]. To produce a generation interested and skilled in science, technology, engineering, and mathematics (STEM), it is critical to recruit teachers with relevant backgrounds in education [2]. To ensure highly qualified teachers teach in senior high schools (SHSs), the Department of Education (DepEd) established clear hiring guidelines focusing on education, experience, specialized training, communication skills, lesson planning, classroom management, pedagogy, language proficiency, and student assessment [3]. DepEd order No. 3, s. 2016 aims that all teachers will be teaching in their field of specialization to be experts in their area and to deliver high-quality instructions. A study found out that teachers who teach in their field of specialization are better at considering the ideas of students, engaging students in deeper conceptual thinking, which frequently results in higher levels of engagement from the students and show a greater level of comfort with the material they are teaching [4], [5].

However, due to teacher shortages, many teach outside their field, undermining these objectives. This mismatch stems from disparity between the demand and supply of qualified teachers [6]. Out-of-field teaching has long posed challenges in education [7], [8]. In the Philippines, it has contributed to poor student performance in international assessments like the Program for International Student Assessment (PISA). The country's performance in 2018 showed little improvement in the most recent PISA 2022 test results [9]. There is a clear negative link between out-of-field instruction and students' science achievement outcomes [10]. Additionally, teachers outside their expertise often feel stressed, lack confidence, and struggle with classroom management. Another implication is that learning tends to be more teacher-centered. Students passively receive lectures from the teacher. While knowing physics, most students cannot link the material they learned in real life applications [11], [12].

This study rested on a specific exploration of the lived experiences and pedagogical practices of out-of-field teachers assigned to teach general physics in the Caraga Region of the Philippines—an area that had remained insufficiently addressed in the existing literature. While previous research had broadly examined out-of-field teaching within STEM disciplines, this study distinguished itself by employing a descriptive phenomenological approach to generate context-specific insights into instructional challenges, adaptive strategies, and professional development needs unique to general physics. Through its localized, subject-specific lens, the study offered valuable implications for education policy, particularly in relation to teacher deployment, capacity building, and targeted support mechanisms for non-specialist educators. Furthermore, it investigated the lived experiences, challenges, coping ways, and perceptions of out-of-field teachers in teaching general physics, in alignment with the objectives of the K to 12 enhanced basic education curriculums. By capturing these experiences, the study aimed to contribute meaningful evidence to inform policy formulation, specialized development design, and institutional support for educators navigating out-of-field teaching assignments.

2. METHOD

2.1. Research design

This study used a qualitative phenomenological approach to understand the experiences of out-of-field teachers in general physics. Data were composed through interviews with 10 participants using both online and offline formats. These interviews focused on themes such as teaching practices, experiential learning, institutional support, professional development, and personal growth. Additional insights were gathered through online focus group discussions and an analysis of the unified modules provided by DepEd Caraga to examine instructional materials and teaching strategies.

Thematic analysis, guided by descriptive phenomenological method, was used to identify recurrent patterns in the data. This rigorous 7-step process ensured a detailed and accurate thematic structure by staying closely connected to the data. Through interview findings, this study offers a complete understanding of the struggles and growth experienced by out-of-field teachers while emphasizing the need for targeted support and professional development opportunities.

2.2. Sample

This study was implemented in public SHSs in the Caraga Region of the Philippines between April and November 2022. The Caraga Region, known as Region XIII, is located in Northeastern Mindanao. It encompasses 5 provinces: Agusan del Sur, Agusan del Norte, Dinagat Islands, Surigao del Sur, and Surigao del Norte. The research utilized criterion sampling to select participants who met the following criteria: i) with one-to-three-year teaching experience; ii) appointment as a STEM strand teacher; iii) assigned to teach general physics despite not specializing in physics and iv) voluntary participation and willingness to articulate their experiences as out-of-field teachers. These criteria ensured the inclusion of participants capable of providing rich and varied responses, allowing the study to capture the lived experiences and challenges faced by non-physics teachers teaching general physics. The approach helped the researcher gain in-depth insights into the realities of out-of-field teaching in the region.

2.3. Data collection

Permission for the study was obtained by sending a transmittal letter to the DepEd Regional Office, superintendents, and school heads, outlining the purpose and scope of involving out-of-field teachers. After receiving approval, selected participants were informed of the study's objectives, benefits, confidentiality measures, and time commitment. They provided their informed consent to participate. Data collection involved in-depth interviews conducted via various platforms, including Zoom, Google Meet, Messenger, and telephone, as well as face-to-face interactions, depending on the participants' convenience. Interviews were recorded, with prompts used to encourage detailed discussions of their experiences in out-of-field teaching. Participants were contacted afterward to validate their responses and provide clarifications where needed.

2.4. Instrument

The researcher utilized validated interview questions to ensure the reliability and relevance of the data collection process. The validation process involved 3 experts: 2 qualified physics professors and one qualitative research specialist. These experts reviewed the interview questions for clarity, language, wording, and relevance to the study's objectives.

Following expert validation, the interview questions were pilot tested to refine their effectiveness further. The finalized interview included three central questions, supplemented with probing questions designed to delve deeper into participants' views and clarify ambiguous responses. This approach ensured a comprehensive exploration of the participants' experiences while maintaining the rigor and reliability of the qualitative research process. Specifically, this study sought to answer the following questions:

a. What is your profile in terms of:
- Educational qualification to teach general physics
- Number of years in teaching
- Number of years experience as an out-of-field teacher
- Number of trainings/seminars in physics?

b. How will you describe your experience in handling physics despite being non-physics major?
- How do you plan and prepare for your lessons in general physics?
- How do you keep your students engaged and motivated during lesson delivery?
- Do you think you were able to achieve your lesson goals after your lesson delivery?

c. What are the challenges you encountered in teaching physics? What did you do to cope or address the said challenges?
- Did you get support from your school/colleagues on how to manage teaching subject that is not your specialization?
- Do you think teaching a subject that is out of your field has its benefits?

d. What did you learn as an out-of-field teacher?
- What advice would you give to other out-of-field teachers teaching general physics?
- What are your recommendations to school administrators for assigning teachers to teach general physics?

2.5. Data analysis

Table 1 presented the steps in Colaizzi's descriptive phenomenological method. This study employed thematic analysis to identify recurring themes within the data, ensuring a systematic approach to interpreting participants' experiences. A semantic approach was used, allowing meanings to emerge directly from the data rather than being shaped by pre-existing theories. Colaizzi's method provided a structured framework for data analysis, ensuring rigor and coherence. The Table 1 outlined the key steps in this process.

Table 1. Steps in Colaizzi's descriptive phenomenological method

No.	Steps	Description
1	Familiarization	The researcher familiarizes him or herself with the data by reading through all the participant accounts several times.
2	Identifying significant statements	The researcher notes any claims made in the reports that clearly connect to the topic being studied.
3	Formulating meanings	After carefully examining the significant statements, the researcher deciphers meanings pertinent to the phenomenon. For the researcher to stay as close to the phenomenon as it is experienced, they must automatically "bracket" their presumptions (though Colaizzi recognises that complete bracketing is never possible).
4	Clustering themes	The researcher groups the identified meanings into themes that run through the narratives. Premises must again be bracketed to avoid any potential influence from existing theory.
5	Developing an exhaustive description	The researcher incorporates all the topics generated in step 4 into a comprehensive and all-encompassing account of the phenomena.
6	Producing the fundamental structure	The researcher summarizes the lengthy explanation into a short, compact statement that only includes the elements believed to be fundamental to the phenomenon's structure.
7	Seeking verification of the fundamental structure	All participants (or occasionally a subsample in more extensive studies) are again given the fundamental structure statement to see if it accurately describes their experiences. In light of this feedback, he or she may adjust previous analysis steps.

3. RESULTS AND DISCUSSION
3.1. Participants' profile

This study involved ten participants: 4 female and 6 male educators, all currently teaching at DepEd schools in the 5 Provinces of Caraga. The participants included three from Surigao del Sur, two from Surigao del Norte, three from Dinagat Islands, one from Agusan del Sur, and one from Agusan del Norte. The participants' overall teaching experience ranged from one to 20 years; however, their teaching experience specifically in General Physics ranged from one month to five years.

Most participants reported receiving no training or seminars for teaching the subject, and their assignments were temporary. This reflects the issue of out-of-field teaching, which often arises as a short-term solution to staffing gaps caused by limited specialized teaching staff. In such cases, teachers frequently transition into new teaching contexts, requiring them to learn unfamiliar content without the opportunity to consistently teach the same subject or grade level. Research showed that out-of-field teachers needed 3 to 5 years to develop adequate expertise in an unfamiliar subject or grade level [13]. This period allowed them to build confidence and define themselves as proficient in the field. However, frequent changes in teaching assignments and unfamiliar teaching methods often overwhelmed and exhausted teachers, particularly when resources and support were limited [14].

The data revealed that teacher shortages and unequal teacher distribution were significant factors. Shortages in specific subjects led to educators being assigned outside their areas of expertise. Consequently, non-specialist teachers had to manage unfamiliar subjects, often facing notable challenges as a result [15], [16]. A study revealed that this phenomenon significantly impacts teaching quality and must be addressed. Recognizing its implications is essential for ensuring effective teaching, providing crucial teacher support, and implementing adequate teacher development programs [17].

3.2. Lived experiences of the out-of-field teachers in handling general physics

Table 2 presented the lived experiences of out-of-field teachers in handling general physics, focusing on their planning and preparation of lessons, teaching strategies, and achievement of lesson goals. The analysis captured key themes that highlighted how these teachers navigated the challenges of teaching outside their specialization. It explored their approaches to lesson planning, the instructional methods they employed, and their efforts to ensure students met learning objectives. The Table 2 provided valuable insights into their strategies, adaptations, and professional growth in delivering general physics instruction. When participants were asked about planning and preparation of lessons, teaching strategies, and achievement of lesson goals, 5 major themes emerged. These included reliance on ready-made modules, lesson planning as a coping strategy, and the intensive preparation, engaging pedagogical strategies and barriers to achieving learning goals.

Table 2. Lived experiences of the out-of-field teachers in handling general physics

Themes	Subthemes	Verbatim English transitions	Citations
Planning and preparation of lessons:			
1. Reliance on ready-made modules		"We have modules from region, from our own region, so all the, uh, materials were based on our modules." (R8)	[18], [19]
2. Lesson planning as a coping strategy		"Um, for planning, uh, I make daily, daily lesson log or daily lesson plan and for the preparation of everyday lesson." (R6)	[20], [21]
3. Intensive preparation required		"I was last minute informed that I will be teaching general physics 1... I had to read books, watch YouTube, just to prepare my lessons." (R4)	[22]
Teaching strategies:			
4. Engaging pedagogical strategies	Advance reading	"I will give the students advance information about the next topic and I will provide them guide questions so that students will do some research." (R7)	[23]
	Game-based learning	"Aside from the activities given in the modules, I also added some ice breakers in teaching physics... additional games, which is related to the topic." (R1)	[24], [25]
	Problem-solving activities	"I give word problems which students solve during class. I ask them to solve problems on the board and explain their answers after." (R9)	[26], [27]
Achievement of lesson goals:			
5. Barriers to achieving learning goals	Students' performance	"The outputs and results of the assessment show their um understanding to the topic that was delivered to them." (R1)	[28]
	Possibility of short-changing students	"If teacher is struggling with the subject, how much more to the students. The STEM curriculum will fail if the teacher handling physics is not capable." (R5)	[29], [30]
	Attitude towards physics	"Sometimes there are some students which is, um, need attention ma'am. Sometime they get out of hand." (R6)	[31], [32]
	Limited time	"There are topics that were not discussed because of the shortage of time." (R10)	[33], [34]

3.2.1. Planning and preparation of lessons

Theme 1, reliance on ready-made modules: participants reported relying on DepEd Caraga modules and incorporating activities into their lessons to address limitations due to their academic backgrounds. Regional Memorandum No. 094, s. 2021 allowed School Division Offices in Caraga to use quality-assured self-learning modules (SLMs) and learning activity sheets (LASs) from other divisions [18]. These resources guided teachers and students through the content, supporting findings that online modules improved teachers' resilience in managing unfamiliar content [19].

Theme 2, lesson planning as a coping strategy: findings showed that teachers created daily lesson plans to prepare for their tasks, emphasizing the importance of lesson planning, as outlined in D.O. 42, s. 2016, which highlighted its role in effective teaching [20]. Lesson planning helped teachers reflect on what and how to teach and assess learning. This confirmed that planning supports teaching and aids in curriculum control and the implementation of schemes of work [21]. Moreover, this practice reinforced curriculum implementation and instructional coherence, supporting both pedagogical effectiveness and student learning outcomes.

Theme 3, intensive preparation required: self-learning was evident among participants, who noted that teaching subjects outside their specialization required extra effort. They relied on online resources, such as video tutorials, books, modules, and slide presentations, to prepare. Teachers found it challenging due to a lack of subject mastery but managed to cope. A key issue was the time needed to familiarize themselves with new subjects. This supports the study which found that out-of-field teaching challenges teachers by requiring them to learn new content, which demands time, effort, and a deep understanding of teaching strategies. This affects their ability to teach effectively, compromising instruction quality [22].

3.2.2. Teaching strategies

Theme 4, engaging pedagogical strategies: the findings revealed that out-of-field general physics teachers employed engaging pedagogical strategies to enhance student motivation and participation. Specifically, 3 key approaches were identified: advanced reading, game-based learning, and problem-solving activities. These strategies facilitated active learning, encouraged critical thinking, and created a more interactive classroom environment, thereby improving student engagement and conceptual understanding.

Advance reading: one strategy to engage students is providing advanced reading materials, offering an overview of the lesson and sparking interest. The informants' responses suggest that teachers act as facilitators of learning, guiding students to process information actively rather than passively receiving it. This finding aligns with studies showing that teacher facilitation leads to significantly higher behavioral and cognitive engagement in students [23].

Game-based learning: game-based learning emerged as an effective strategy for enhancing student engagement and fostering active participation in general physics classes. Prior studies have demonstrated its positive impact on learning performance by increasing student motivation, interest, and collaborative interactions [24]. It can positively affect student engagement, increasing interest, motivation, and peer learning [25]. By integrating game-based activities, teachers created a dynamic learning environment that encouraged peer learning and deeper conceptual understanding of physics concepts.

Problem solving activities: participants mentioned using problem-solving exercises to engage students. According to D.O. 042 s. 2017 and the Philippine professional standards for teachers (PPST), teachers were expected to use diverse resources and provide intellectually challenging activities to encourage constructive classroom interactions aimed at achieving high learning standards [26]. This suggested that teachers not only focused on learning goals but also on developing students' problem-solving skills. This finding aligned with previous studies, which showed that problem-posing activities enhanced students' awareness of their learning, improved their ability to monitor progress, and fostered metacognitive awareness [27].

3.2.3. Achievement of lesson goals

Theme 5, barriers to achieving learning goals: the findings revealed several barriers that hindered the achievement of learning goals in general physics instruction. Participants highlighted variations in student performance, possibility of short-changing students, and students' negative attitudes toward physics as significant constraints. Additionally, limited instructional time to cover the most essential learning competencies (MELCs) further impeded comprehensive content delivery, potentially affecting students' conceptual understanding and academic outcomes.

Students' performance: participants used students' test scores as feedback on their teaching. This suggests a connection between teaching quality and student performance. While poor test results are often attributed to the student, one significant cause could be the quality of teaching [28]. Exploring the link between teaching effectiveness and student performance may lead to revised strategies or lesson adjustments, ensuring quality instruction despite teachers limited academic preparation in general physics.

Possibility of short-changing students: while adapting to their new teaching assignments, participants expressed concerns about teaching general physics. They were expected to demonstrate commitment, effectiveness, and competency as key contributors to student development. According to the PPST, quality teachers must exhibit mastery of content knowledge within and across curriculum areas to be effective in the 21st-century classroom [29]. Teachers must deliver accurate, up-to-date content while using effective methodologies and strategies. Participants reported feeling unprepared when assigned to teach the subject. This aligns with studies showing that inadequate teacher readiness reduces teaching effectiveness, negatively impacting student learning outcomes and achievement [30].

Attitude towards physics: non-physics teachers face challenges teaching physics due to students' lack of readiness and negative attitudes toward the subject. Many students struggle with basic concepts and equations, requiring teachers to simplify lessons, which is especially difficult for non-specialists. Additionally, some students intentionally challenge teachers' authority, complicating classroom management. Research indicates that out-of-field teachers often hesitate to address disruptive behavior, undermining classroom dynamics and learning outcomes. This creates strained trust between teachers and students, leaving teachers feeling overwhelmed and criticized as they handle these issues alone [31]. Students' subjective perceptions of teachers, such as whether they liked them, influenced their ratings of teachers' clarity of instruction and the frequency of practical work in science lessons [32].

Limited time: time is a limited resource for both students and teachers. Many teachers reported struggling to cover the extensive mandated content in lessons due to time constraints. As a result, they often skip lessons or critical aspects of effective teaching to meet curriculum demands. Acquiring knowledge requires time, patience, and practice. Students should engage in various activities to deepen their understanding and achieve effective learning outcomes [33]. An independent review of the crowded curriculum noted that teachers are often forced to skim content and quickly shift between topics, as they are increasingly required to cover a wide range of subjects. An independent review of the crowded curriculum noted that teachers must skim content and shift between topics because they are required to cover a wide range of material. This leads to student disengagement [34]. This suggests that both students and teachers often perceive the general physics curriculum as overloaded due to an excessive number of topics, a consequence of a crowded curriculum.

3.3. Challenges and coping mechanisms of out-of-field general physics teacher

Table 3 presented the challenges and coping mechanisms of out-of-field general physics teachers, particularly regarding the absence of collegial support and the potential benefits of teaching beyond their specialization. The findings identified 2 key themes: the struggle associated with minimal institutional and peer assistance, which hindered effective instructional delivery, and the professional growth opportunities that emerged despite these challenges. Notably, some teachers highlighted that teaching outside their field fostered the development of innovative pedagogical approaches, enhanced content mastery, and strengthened adaptability, ultimately contributing to their professional competence and instructional resilience.

Table 3. Challenges and coping mechanisms of out-of-field general physics teacher

Themes	Subthemes	Verbatim English transitions	Citations
Support from school/colleagues:			
6. Institutional and peer support	Lack of support	"There was no support coming from the school heads and my colleagues since there is no, uh, physics major teacher in my school." (R5)	[35]–[37]
	Peer support	"The teacher who handled the general physics gave, uh, some modules and links in order for me to get my materials to be given to the students." (R8)	[38]
Benefits as out-of-field teacher:			
7. Professional growth opportunities	Learning new knowledge	"So, for me, I get to learn and discover more on or deep about, um, physics." (R1)	[39]
	Skill appreciation	"One of this is that I can appreciate my math knowledge in physics because I can connect that to physical phenomena." (R6)	[40]
	Empowerment	"It develops you more. Then you have-you will be taken out of your comfort zone. So, you will be developed, and you'll learn about this field." (R10)	[41]

3.3.1. Support from school/colleagues on how to manage teaching general physics

Theme 6, institutional and peer support: the analysis of participants' responses revealed 2 critical aspects of institutional and peer support: the lack of formal assistance and the presence of peer collaboration.

Many out-of-field general physics teachers reported minimal institutional support, making it difficult to navigate the complexities of teaching a subject outside their specialization. However, some educators highlighted the importance of peer support, emphasizing that collegial collaboration provided valuable guidance, shared resources, and a sense of professional belonging, which contributed to their instructional confidence and adaptability.

Lack of support: out-of-field teachers face complex demands that can quickly lead to anxiety and tension, impacting teaching quality. These feelings of inadequacy often lead to isolation and guilt, affecting their professional identity as teachers [35]. The data shows that teachers struggle to teach general physics due to a lack of professional support for subject mastery. Additionally, the scarcity of reliable materials increases the burden on teachers. Professional mentoring or training on subject mastery, along with access to quality materials, can significantly boost teachers' confidence and expertise. Research indicates that mentoring interventions support teacher knowledge growth and enhance teacher retention [36]. Due to a lack of pedagogical training, teachers rely on their own strategies, which hinders the standardization of teaching methods [37].

Peer support: another theme was peer support. When the previous general physics teacher provided modules, colleagues offered help when needed. Participants identified harmonious relationships among colleagues as key to solving teaching challenges. Teachers were encouraged to support each other, improving their teaching in areas of struggle. Effective collaboration fosters collective expertise, enabling teachers to access resources and consultations tailored to student needs [38].

3.3.2. Benefits as an out-of-field teacher

Theme 7, professional growth opportunities: the analysis of participants' responses highlighted several professional growth opportunities associated with teaching outside their specialization. Many educators reported that teaching general physics enabled them to develop a deeper understanding of the subject, enhancing their overall content knowledge and instructional competence. Additionally, teachers expressed an increased appreciation for their pedagogical skills, as adapting to a new discipline required them to refine their teaching strategies and employ innovative approaches. Moreover, this experience fostered a sense of empowerment, as it challenged them to expand their expertise, build resilience, and cultivate a more adaptable and interdisciplinary teaching mindset.

Learning new knowledge: several participants noted that learning new subjects outside their majors was interesting, which motivated them to study and share knowledge with their students. With sustained motivation, they believed they would eventually master the material. Attitude plays a crucial role in both learning activities and learning outcomes [39].

Skill appreciation: several participants emphasized the opportunity to apply their mathematical skills in the shift to teaching physics. As key agents in the teaching-learning process, teachers must possess adequate mathematical proficiency to enhance teaching effectiveness. Since mathematics is essential for understanding physics, teachers need these skills. Studies show that mathematical proficiency is crucial for mastering physics concepts. When teachers recognize their ability to teach physics using their mathematics skills, it positively impacts their confidence and effectiveness in teaching [40].

Empowerment: teacher appreciation is a key factor in teacher competency. Empowerment occurs when both school and external parties increase their appreciation for out-of-field teachers. This boosts teachers' motivation and competency, improving student achievement. Through empowerment, teachers gain new knowledge and skills, helping them overcome challenges in the teaching and learning process [41].

3.4. Learnings as an out-of-field general physics teacher

Table 4 presented the insights gained by out-of-field general physics teachers, emphasizing their adaptive strategies and professional reflections. The findings underscored 2 critical themes: the significance of flexibility, passion, and dedication in navigating instructional challenges, and recommendations for school administrators to enhance teacher support and subject alignment. These insights highlighted the necessity of targeted professional development, structured mentorship programs, and institutional policies that address the challenges faced by out-of-field teachers while fostering their instructional competence and effectiveness.

3.4.1. Advice to give to other out-of-field teachers

Theme 8, flexibility, passion, and dedication: the findings underscored the significance of flexibility, passion, and dedication in overcoming the challenges of teaching outside one's specialization. Participants emphasized the necessity of adaptability, as they had to swiftly adjust their instructional methods and content knowledge to effectively deliver physics lessons. Self-directed learning through various resources emerged as a critical strategy, enabling teachers to enhance their understanding of complex concepts and improve their pedagogical approaches. Additionally, seeking assistance from colleagues was identified as an essential support mechanism, fostering collaborative learning and knowledge-sharing to enhance instructional effectiveness.

Table 4. Learnings as an out-of-field general physics teacher

Themes	Subthemes	Verbatim English transitions	Citations
Advice to give to other out-of-field teachers:			
8. Flexibility, passion, and dedication	Be flexible, passionate, and prepared	"I really have to give extra effort... So, my advice would be-be flexible. Because teachers in the DepEd are made to be flexible." (R10)	[42], [43]
	Self-learning through resources	"Teacher who is assigned to teach physics must read a lot and do exercises because if you want to learn physics, you do physics." (R5)	[44], [45]
	Ask for colleague assistance	"It will be so lucky for you if you have a colleague that is very willing to teach you on the topic or give advice on how to teach the lesson." (R4)	[46]
Recommendations to administrators:			
9. Recommendations to administrators	Assign to master/math teachers	"General physics must be assigned to a more experienced and knowledgeable person with a background in calculations, like the master teacher or mathematics teacher." (R3)	[47]
	Assign based on specialization	"So maybe on the parts of the admin, I would discourage like giving subjects to teachers that is not their field of specialization... motivating students and helping them understand lessons well." (R4)	[48], [49]
	Provide technical assistance	"If the subject is given to a non-physics teacher, extend technical support or let the teacher attend trainings or seminars." (R10)	[50], [51]

Be flexible, passionate, and prepared: many participants advised other out-of-field teachers to manage stress and set realistic expectations, emphasizing the importance of doing their best. Out-of-field teaching is seen as a part of teachers' professional lives. The focus shifts from what a teacher is "certified to teach" or "specialized in" to what they are "capable" and "willing" to teach [42]. Preparing lessons with the daily lesson log (DLL) and detailed lesson plan (DLP) allows teachers to reflect on their strategies, identify students' learning needs, and plan how to facilitate the teaching process [43].

Self-learning through resources: the issue of self-learning through diverse resources has gained attention. DepEd Order No. 18, s. 2020 supports the implementation of the basic education learning continuity plan (BE-LCP) by providing learning resources [44]. The DepEd provides free learning materials, including print and electronic resources, to support teaching and learning. These materials include subject content, teaching strategies, and student activities. The learning resource management and development system improves education delivery by offering high-quality, research-based materials. Developed and shared based on teaching experience and research, these resources effectively enhance educational outcomes [45].

Ask for colleague assistance: seeking help from colleagues alleviates the stress of being an out-of-field teacher. The code of ethics for professional teachers underscores mutual support among educators. Participants noted that maintaining good working relationships with colleagues helps when teaching outside their specialization. Non-field teachers often observe peer teaching and seek guidance from experienced teachers. Fostering friendly relationships among colleagues enhances teaching quality. Peer support systems are crucial for addressing challenges while working toward solutions for broader systemic issues in public education [46].

3.4.2. Recommendations to administrators

Theme 9, recommendations to administrators; the findings highlighted the need for strategic teacher assignments and institutional support to enhance instructional quality in general physics. Participants emphasized that assigning the subject to master teachers or those with a strong foundation in mathematics would improve content delivery and student comprehension. Additionally, aligning teaching assignments with educators' areas of specialization was recommended to ensure effective instruction. Lastly, providing technical assistance, such as targeted training and mentoring programs, was identified as crucial in equipping out-of-field teachers with the necessary competencies to teach general physics effectively.

Assign to master/math teachers: participants suggested that teachers teaching subjects outside their expertise should consult competent colleagues. They emphasized that general physics should be assigned to experienced teachers with a background in calculations, such as master or mathematics teachers. Studies show that master teachers excel in instructional leadership, particularly in curriculum content, pedagogy, assessment, reporting learner outcomes, and professional growth. If no teacher is available for the subject, school administrators should assign it to seasoned educators rather than newly hired teachers as they were recognized for their exemplary classroom expertise therefore positioned them in providing valuable guidance and support to other teacher [47].

Assign based on specialization: participants discouraged assigning subjects outside teachers' specializations, emphasizing the importance of aligning assignments with teachers' strengths to improve content mastery. A Deped order addressed academic misalignment by allowing teachers with any science specialization to handle other sciences at the secondary level. This policy aimed to reduce mismatches in teaching loads, improve efficiency, and enhance employment opportunities for specialized teachers, particularly in understaffed areas like physics [48]. The scarcity of physics teachers underscores the need for DepEd to collaborate with teacher education institutions to promote specialization. Research-based policies are essential to ensure high-quality education, as teachers' qualifications and curriculum content influence the Philippines' performance in assessments [49].

Provide technical assistance: out-of-field teachers suggested that administrators provide technical assistance to support their professional development and improve their knowledge and skills. Participants recommended upgrading webinars to focus on subject content, not just teaching strategies. Administrators should offer content-specific courses alongside pedagogy training for out-of-field teachers [50]. Studies show that subject-specific training leads to more effective teaching and higher student proficiency [51].

4. CONCLUSION

The study reveals the challenges of out-of-field teaching, particularly in general physics within the Caraga Region. Teachers face difficulties such as heavy reliance on ready-made modules, extensive lesson preparation, and the need for varied strategies to motivate students. While institutional and peer support, along with personal traits like dedication and flexibility, help teachers manage, many disapprove of out-of-field assignments due to the lack of subject expertise, inadequate training, and limited teaching experience. These issues lead to stress, burnout, and decreased job satisfaction, ultimately affecting teaching quality and student learning outcomes. Although out-of-field teaching offers benefits like learning new content and skills, the drawbacks, including undermined teaching effectiveness and compromised student education, are significant. The study emphasizes the need for policies that align teachers with their specializations, improved training programs, and institutional efforts to eliminate out-of-field teaching, ensuring high-quality education for all students.

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C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

CONFLICT OF INTEREST STATEMENT

Authors state no conflict of interest.

INFORMED CONSENT

We have obtained informed consent from all individuals included in this study.

ETHICAL APPROVAL

Participation in this study was voluntary, with particpants providing written consent after being fully informed about the study's purpose, methods, and their role. Particpants were assured of their right to withdraw at any time without needing to provide an explanation. The study prioritized privacy, confidentiality, and anonymity to protect the participants' interests and ensure their trust.

The researcher emphasized respect for participants' autonomy, treating them as independent decision-makers throughout the study. After the interviews and data analysis, all collected data were securely discarded to prevent unauthorized access or disclosure. Only redacted data were shared, ensuring that participants' identities and personal information remained protected. This ethical approach underscored the researcher's commitment to upholding the rights and dignity of all participants.

DATA AVAILABILITY

The data that support the findings of this study are available from the corresponding author, [AJGR], upon reasonable request.

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